CASE REPORT

Concurrent cutaneous and skeletal tuberculosis presenting as multifocal extrapulmonary disease: A case report

Sricharen Sridhar[1], Mohini Singh[1], Ramakrishnan Subbaraya Rajendran[1], Sudha Madhavan[1], Lawrence D Cruze[2], Subalakshmi Balasubramaniam[2]*

[1]Department of General Medicine, [2]Department of Pathology, Sri Ramachandra University, Chennai-600116 (Tamil Nadu) India

Abstract

Tuberculosis continues to pose a significant health burden in developing nations such as India, contributing to nearly one-third of tuberculosis cases globally. The cutaneous form of extrapulmonary tuberculosis, though not life-threatening, poses a diagnostic challenge due to its varied clinical presentation and low incidence; delayed treatment may result in irreversible scarring. Metastatic tuberculous abscesses are more commonly observed in individuals with compromised immune status. Concurrent involvement of the skin and skeletal system as a manifestation of extrapulmonary tuberculosis is rarely reported. Herein, we present a patient with multiple skin abscesses and skeletal involvement, complicated by chronic hepatitis B infection, to emphasize the need to consider tuberculosis, particularly in patients unresponsive to standard antibiotic therapy and the importance of early recognition for timely diagnosis and effective management.

Keywords: Extrapulmonary tuberculosis, skin abscesses, immunocompromised host

Introduction

Tuberculosis, an airborne communicable disease, continues to be endemic in developing countries such as India. According to the Global Tuberculosis Report 2023, the incidence of tuberculosis was estimated at 10.6 million cases globally, with India contributing to nearly one-third (28%) of the overall burden [1]. Extrapulmonary Tuberculosis (EPTB) accounts for approximately 15–20% of all tuberculosis cases, with a higher proportion reported in South-East Asia and immune-compromised individuals [1, 2]. Due to its multisystem involvement and nonspecific clinical manifestations, under-reporting of EPTB is common, reflecting the iceberg phenomenon [2]. Cutaneous tuberculosis constitutes 1–2% of EPTB cases [3, 4]. Due to its close resemblance to other dermatological conditions, early diagnosis continues to be a challenge. We report a patient with compromised immune status presenting with metastatic skin abscesses, who subsequently had a spinal involvement, highlighting an unusual presentation of a common disease and the potential complications associated with delayed diagnosis.

Case Report

A 51-year-old male presented with one-year history of dry cough of insidious onset, which was non-progressive and unresponsive to symptomatic treatment provided at outside hospitals, had complaints of low-grade intermittent fever associated with weight loss since past one month. Over the past nine months, patient noticed development of multiple soft tissue lesions, initially involving the right thigh and subsequently the left thigh, anterior chest wall, limbs, and neck. Approximately two months after the onset of initial swelling, purulent

discharge was noted from the right thigh lesion; pus culture and sensitivity testing done had showed no microbial growth. Additional soft tissue lesions later appeared over the left side of chest and epigastric regions. Despite receiving multiple short courses of antibiotics, no improvement in symptoms was noted. Incision and drainage had been performed at an outside hospital, and cytological examination revealed features of necrotizing chronic granulomatous inflammation, suggestive of a non-tuberculous granuloma or fat necrosis, following which the patient was referred to us for further evaluation and management. Cytology slides from the initial procedure were not available for review. The patient was diagnosed with chronic hepatitis B infection three years prior to presentation and had received treatment with lamivudine; which was discontinued one year post initiation of treatment. A significant contact history of tuberculosis was present, as the patient's mother had been treated for pulmonary tuberculosis eight years ago.

On examination, the patient was moderately built, pallor was noted. There was no clubbing or generalized lymphadenopathy. Vitals were stable, and systemic examination was unremarkable. Local examination revealed a discharging sinus over the left ankle and a hyperpigmented, jelly-like lesion over the lateral aspect of the right thigh (Figure 1). Multiple swellings were noted, which were soft in consistency, erythematous and non-tender (Figure 2). Differential diagnoses then considered were staphylococcal skin abscesses, tuberculosis and melioidosis [8, 9]. Mantoux test done was strongly positive, with an induration measuring 20 mm. Erythrocyte sedimentation rate was markedly elevated at 119 mm/hr. Chest X - ray was normal. Incision and drainage of the left chest wall abscess (Figure 3) was performed and pus samples were sent for further evaluation. Cartridge-Based Nucleic Acid Amplification Test (CBNAAT) detected *Mycobacterium tuberculosis* with rifampicin sensitivity. Hepatitis B viral DNA level was 13,50,000 IU/mL. The patient was initiated on antitubercular medications – weight base and treatment for chronic hepatitis B infection.

One month later, the patient presented with low

Figure 1: Hyperpigmented jelly like lesion – Lupus vulgaris

Figure 2: Tuberculous chest wall abscess

back pain with localized tenderness over the dorsolumbar spine. High - resolution computed tomography of the thorax, revealed scattered centrilobular nodules in bilateral lungs, few in a tree-in-bud pattern, patchy consolidation in the left upper lobe, loculated minimal pleural effusion and an enlarged subcarinal lymph node - features suggestive of an infective etiology. Associated skeletal findings included pathological fracture of D10 vertebral body (Figure 3). In view of above mentioned findings, magnetic resonance imaging of the whole spine was performed, which demonstrated altered signal intensities involving the D9 and D10 vertebral bodies with collapse of the D10 vertebra, along with mildly enhancing prevertebral and paravertebral collections. A well-defined, peripherally enhancing round lesion was also noted in the L1 vertebral body, suggestive of a tuberculoma (Figure 4). The patient subsequently underwent posterior spinal instrumentation from D8 to D12 with decompression at D9–D10. Biopsy samples were obtained, and anterior bone grafting was performed. Postoperatively, the patient was mobilized with Thoracolumbosacral Orthosis (TLSO) support. Histopathological examination of the D9–D10 granulation tissue revealed an organising inflammatory process composed of neutrophils, plasma cells and lymphocytes, with areas of fibrosis; no evidence of granuloma or malignancy was identified (Figure 5). These findings were interpreted in conjunction with the clinical, radiological, and microbiological evidence and a tubercular etiology was favored [2, 3]. In view of skeletal involvement, extended antitubercular therapy for a total duration of 18 months was advised. On follow-up after three months, significant resolution of the cutaneous swellings was observed.

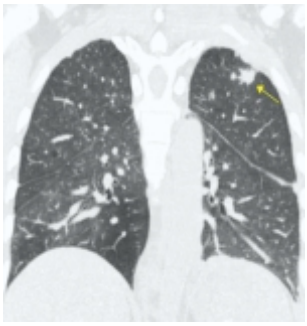

Figure 3: CT Thorax showing patchy consolidation, centrilobular nodules and tree in bud pattern suggestive of an infective etiology

Figure 4: MRI whole spine sequence – suggestive of altered signal intensities in D9, D10 vertebral bodies with collapse of D10 vertebral body and mildy enhancing pre and para vertebral collections

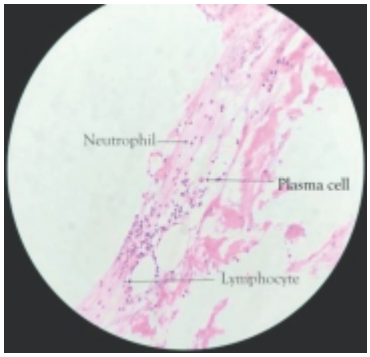

Figure 5: H and E (200×) shows inflammatory cells composed of neutrophils, lymphocytes and plasma cells

Discussion

EPTB, predominantly caused by *Mycobacterium tuberculosis* and occasionally by other mycobacterial species, accounts for approximately 15–20% of all tuberculosis cases worldwide [1]. Due to its diverse clinical manifestations and nonspecific symptomatology, EPTB poses significant diagnostic challenges, often resulting in a delay in diagnosis and uncertainty in management [2, 3]. Cutaneous tuberculosis represents approximately 1–2% of EPTB cases and is reported more frequently in children than in adults [3, 4]. Although it rarely is life-threatening, cutaneous tuberculosis can lead to considerable morbidity, necessitating repeated hospital visits and carries risk of permanent disfigurement and scarring when the diagnosis and treatment get delayed [4]. According to Kumar *et al*., lupus vulgaris is the most common clinical form of cutaneous tuberculosis, followed by scrofuloderma, tuberculosis verrucosa cutis, and tuberculous skin abscesses [6]. Metastatic tuberculous abscesses are uncommon and are more frequently encountered in patients with underlying immunosuppression [7]. Recent epidemiological data suggests that despite sustained global TB control efforts, the burden of EPTB and disseminated TB remains substantial in endemic areas, highlighting the need for recognition of uncommon manifestations such as skin and skeletal involvement.

The differential diagnosis of multiple skin abscesses includes staphylococcal infections, melioidosis, atypical mycobacterial infections, fungal infections, and panniculitis [8, 9]. Establishing a definitive diagnosis relies on histopathological and microbiological investigations. The sensitivity of tuberculin skin test is known to be low in cases of cutaneous tuberculosis [2,6,7] and demonstration of acid-fast bacilli or positive cultures from skin and skeletal lesions is challenging due to the paucibacillary nature of the disease [3,6]. In this patient the coexistence of skeletal tuberculosis may have contributed to the strongly positive tuberculin response. Available literature suggests that the concomitant occurrence of cutaneous and skeletal tuberculosis is rare. Kivanç-Altunay *et al*. (2003) reported no skeletal involvement among patients with cutaneous tuberculosis, whereas Kumar *et al.* (2001) identified associated skeletal tuberculosis in only 4 of 75 pediatric cases [6, 7]. In our patient, markedly elevated erythrocyte sedimentation rate and a strongly positive tuberculin test raised the clinical suspicion of tuberculosis, which was subsequently confirmed by microbiological evidence using CBNAAT [10].

Magnetic resonance imaging of the spine provided radiological confirmation of vertebral involvement. Although histopathological examination of the skeletal lesion demonstrated only an organizing inflammatory process without well-formed granulomas, tuberculosis could not be excluded, as extrapulmonary and skeletal forms of tuberculosis frequently exhibit nonspecific histological features, owing to their paucibacillary nature, particularly in immunocompromised individuals [2, 3]. Immune dysregulation secondary to chronic infection was considered to have contributed to disease dissemination and formation of multiple abscesses.

Conclusion

Tuberculosis should be considered an important differential diagnosis in patients presenting with multiple skin abscesses, especially among immunocompromised individuals. A high index of clinical suspicion, supported by radiological and microbiological evidence, is necessary for early identification and initiation of appropriate treatment to prevent disease progression and related complications.

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***Author for Correspondence:**

Dr. Sricharen Sridhar, Department of General Medicine, Sri Ramachandra University, Chennai-, Tamil Nadu
Email: sscharen23@gmail.com
Cell: 9176343703

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